

START

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Mr. John Grantham
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Department of Ecology
Nuclear & Mixed Waste Program
P. O. Box 47600
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FLUOR DANIEL, INC.

Date: March 25, 1993

Reference: Hanford Waste Vitrification Plant
DOE Contract DE-AC06-86RL10838
Fluor Contract 8457

Transmittal No.: WDOE-377

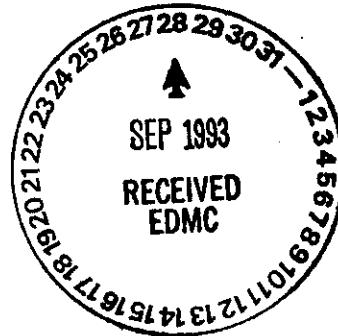
Dear Mr. Grantham:

TRANSMITTAL

We enclose * copy of the items listed below. These are issued per US-DOE request.
*2 FULLSIZE (ROLLED) 1 REDUCED, 2 SPECIFICATION

Response due to Fluor: N/A
Responds to: PACKAGE B265A

NUMBER	REV	DATE	TITLE
SEE TRANSMITTAL ATTACHMENT	-----	03/25/93	PACKAGE B265A VITRIFICATION BUILDING PAINT AND SPECIAL COATINGS.



Distribution:

Reference: FRP-855, FUP-414
R. L. Long: DOE-RL w/o
TWP/AME Corresp Cntrl Cntr, MSIN A5-10
(B265A PACKAGE), w/o
P. Felise, WHC-RL (MSIN G6-16), w/1F, SPEC
Environmental Data Management System
(MSIN H6-08), w/1F, 1 SPEC
D. Duncan, US EPA, Region X w/o

Very truly yours,

Rosalia Cadenas for
R. S. Poulter
Project Director

RSP:JPV:1h

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PAGE 1
DATE 03/24/93
CONTRACT 80845734

Time: 2:59 PM

HANFORD WASTE VITRIFICATION PLANT
COORDS LISTING OF SPECIFICATION FOR PKG B265A

DISC	PACKAGE	SPEC NUMBER	PKG REV	SPECIFICATION TITLE	SEC REV	SECTION	SECTION TITLE	REMARKS
	B265A	B-595-C-B265A	00	VIT BLDG SPECIAL COATINGS				
30					1	09800	SPECIAL COATINGS	
30					1	09940	HIGH PERFORMANCE PAINTING	

TOTAL: 3

Records printed: 3

00/PIPING & INSTRUMENT DIAGRAMS, 05/CIVIL, 10/HVAC, 20/STRUCTURAL, 30/ARCHITECTURAL, 40/MECHANICAL, 50/PIPING, 51/FIRE PROTECTION,
60/ELECTRICAL, 70/CONTROL SYSTEMS, 90/MISCELLANEOUS

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PAGE 1
 DATE 03/25/93
 CONTRACT 80845734

Time: 11:01 AM

HANFORD WASTE VITRIFICATION PLANT
 COORDS LISTING OF DRAWINGS FOR PKG B265A

DISC	PACKAGE	DRAWING NUMBER	SHT NO.	REV	SIGNATURE DATE	DRAWING TITLE	REMARKS
30	B265A	H-2-116007	1	1	03/25/93	VIT BLDG PAINT AND SPECIAL COATINGS TITLE SHEET	
30	B265A	H-2-116008	1	1	03/25/93	VIT BLDG PAINT AND SPECIAL COATINGS DRAWING INDEX	
30	B265A	H-2-117587	2	1	12/21/92	ARCHITECTURAL VIT BLDG TUNNEL PLAN-NORTH END	
30	B265A	H-2-117588	1	1	03/25/93	ARCHITECTURAL VIT BLDG CONTACT MAINT ROOM	
30	B265A	H-2-117589	3	1	03/25/93	ARCHITECTURAL VIT BLDG 1ST FLR PLAN-S/R	
30	B265A	H-2-117591	1	1	03/25/93	ARCHITECTURAL VIT BLDG 2ND FLR PLAN-SOUTH END	

TOTAL: 6

Records printed: 6

00/PIPING & INSTRUMENT DIAGRAMS, 05/CIVIL, 10/HVAC, 20/STRUCTURAL, 30/ARCHITECTURAL, 40/MECHANICAL, 50/PIPING, 51/FIRE PROTECTION,
 60/ELECTRICAL, 70/CONTROL SYSTEMS, 90/MISCELLANEOUS

SPECIFICATIONS

VITRIFICATION BUILDING PAINT AND SPECIAL COATINGS B-595-C-B265A

**HANFORD WASTE
VITRIFICATION PLANT**

**U.S. DEPARTMENT OF ENERGY
RICHLAND OPERATIONS OFFICE**



**FLUOR DANIEL
ADVANCED TECHNOLOGY DIVISION
CONTRACT 8457**

**DOE CONTRACT NO.
DE-AC06-86RL10838**

U.S. DEPARTMENT OF ENERGY
Hanford Waste Vitrification Plant
Richland, Washington
DOE Contract DE-AC06-86RL10838

FLUOR DANIEL, INC.
Advanced Technology Division
Fluor Contract 8457

VITRIFICATION BUILDING
PAINT AND SPECIAL COATINGS
SPECIFICATION B-595-C-B265A

APPROVED FOR CONSTRUCTION

REVISION 1 Per CR-0933

ISSUE DATE 3/23/93

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Rev. 1

VITRIFICATION BUILDING
PAINT AND SPECIAL COATINGS
B-595-C-B265A

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TECHNICAL SPECIFICATIONS

DIVISION 3 - CONCRETE

Section	Title	Rev.
03350	Concrete Sealer and Hardener	0

DIVISION 9 - FINISHES

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09800	Special Coatings	1
09875	Priming of Steel	0
09940	High Performance Painting	1

U.S. DEPARTMENT OF ENERGY
Hanford Waste Vitrification Plant
Richland, Washington
DOE Contract DE-AC06-86RL10838

FLUOR DANIEL, INC.
Advanced Technology Division
Fluor Contract 8457

SECTION 09800
SPECIAL COATINGS
B-595-C-B265A-09800

APPROVED FOR CONSTRUCTION

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ISSUE DATE 3-23-93

WAPA YES NO X
QUALITY LEVEL I X II
SAFETY CLASS 1 2 3 X 4

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3-22-93
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SECTION 09800
SPECIAL COATINGS
B-595-C-B265A-09800

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**SECTION 09800
SPECIAL COATINGS**

PART 1 GENERAL

1.1 SUMMARY

This section covers minimum technical requirements for the preparation of concrete surfaces and the furnishing and installation of special coatings which are chemical resistant, abrasion resistant, radiation resistant (where specified), and decontaminable.

1.2 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by the basic designation only.

AMERICAN CONCRETE INSTITUTE (ACI)

ACI 503R 1989 Use of Epoxy Compounds with Concrete

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

ASTM B117 1990 Standard Test Method of Salt Spray
(Fog) Testing

ASTM C190 1985 Tensile Strength of Hydraulic Cement
Mortars, Test Method for

ASTM D579 1989 Standard Specification for Greige
Woven Glass Fabrics

ASTM D1005 1984 (Reapproved 1990) Standard Test
Method for Measurement of Dry Film
Thickness or Organic Coatings Using
Micrometers

ASTM D1212 1991 Standard Test Methods for Measurement
of Wet Film Thickness of Organic Coatings

ASTM D1653 1991 Rev. A Standard Test Methods for
Water Vapor Transmission of Organic
Coating Films

ASTM D2247 1987 Standard Practice for Testing Water
Resistance of Coatings in 100% Relative
Humidity

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ASTM D2794	1990 Standard Test Method for Resistance of Organic Coatings to the Effects of Rapid Deformation (Impact)
ASTM D3912	1980 (Reapproved 1989) Standard Test Method for Chemical Resistance of Coatings Used in Light-Water Nuclear Power Plants
ASTM D4060	1984 Standard Test Method for Abrasion Resistance of Organic Coatings by the Taber Abraser
ASTM D4082	1989 Standard Test Method for Effects of Gamma Radiation on Coatings for Use in Light-Water Nuclear Power Plants
ASTM D4227	1983 (Reapproved 1989) Standard Practice for Qualification of Journeyman Painters for Application of Coatings to Concrete Surfaces of Safety-Related Areas of Nuclear Facilities
ASTM D4256	1989 Standard Test Method for Determination of the Decontaminability of Coatings Used in Light-Water Nuclear Power Plants
ASTM D4258	1983 (Reapproved 1988) Standard Practice for Surface Cleaning Concrete for Coating
ASTM D4259	1988 Standard Practice for Abrading Concrete
ASTM D4263	1983 (Reapproved 1988) Standard Test Method for Indicating Moisture in Concrete by the Plastic Sheet Method
ASTM D4537	1991 Standard Guide for Establishing Procedures to Qualify and Certify Inspection Personnel for Coating Work in Nuclear Facilities
ASTM D4541	1985 (Reapproved 1989) Standard Test Method for Pull-Off Strength of Coatings Using Portable Adhesion Testers
ASTM D5144	1991 Standard Guide for Use of Protective Coatings Standards in Nuclear Power Plants

ASTM D5163	1991 Standard Guide for Establishing Procedures to Monitor the Performance of Safety Related Coatings in an Operating Nuclear Power Plant
ASTM G14	1988 Standard Method for Impact Resistance of Pipeline Coatings (Falling Weight Test)
ASTM G53	1988 Standard Practice for Operating Light-and Water-Exposure Apparatus (Fluorescent UV-Condensation Type) for Exposure of Nonmetallic Materials

FEDERAL STANDARDS (FED-STD)

FED-STD 595B	1989 Colors Used in Government Procurement
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NATIONAL ASSOCIATION OF CORROSION ENGINEERS (NACE)

NACE RP0172	1972 Surface Preparation of Steel and Other Hard Materials by Water Blasting Prior to Coating or Recoating
NACE TM0169	1969 (Revised 1976) Laboratory Corrosion Testing of Metals for the Process Industries

NATIONAL FIRE PROTECTION ASSOCIATION (NFPA)

NFPA 101	1988 Life Safety Code
NFPA 255	1990 Standard Method of Test of Surface Burning Characteristics of Building Materials

1.3 RELATED REQUIREMENTS

Specification Section 03350	Concrete Sealer and Hardener
Specification Section 09940	High Performance Painting

1.4 DEFINITIONS

- 1.4.1 The terms "Special Coatings", "Coatings", "Special Coatings Systems", and "Coating Systems" are used interchangeably and are defined as high build, heavy duty corrosion control coating and lining systems of generally high viscosity and thixotropy. These materials differ in properties, handling, mixing, and application procedures and techniques relative to ordinary paint and high performance paint systems.

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1.4.2 System

The words "system" and "systems" when used in conjunction with special coatings refer to combinations of primer, surfacer, coating, and finish coats as scheduled in Part 3 of this Specification Section.

1.4.3 Surfaces

Surfaces are defined as all concrete surfaces, including trenches, vaults, and nonvisible areas when permanent or built-in fixtures, equipment, etc., are in place in areas to be coated as scheduled in the Contract Drawings.

1.4.4 Open Joint

A joint which remains conspicuous after coating.

1.4.5 Closed Joint

A joint which is concealed and inconspicuous after coating.

1.4.6 DFT

Dry film thickness

1.4.7 WFT

Wet film thickness

1.4.8 Applicator

Organization responsible for surface preparation and installation of special coatings.

1.4.9 Installer

Individual employed by Applicator to apply special coatings.

1.5 SYSTEM DESCRIPTION

(Not Used)

1.6 SUBMITTALS

Submit the following in accordance with the Vendor Drawing and Data Requirements section of the Order/Subcontract:

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1.6.1 Product Data

Submit manufacturer's published technical information including Material Safety Data Sheets (MSDS), and application instructions for each coating and joint material specified or proposed.

1.6.2 Samples

Submit samples of material and finish for review by Buyer before starting work.

1.6.3 Test Reports

1.6.3.1 Submit test reports made within the previous three years of the date of issue of this section on samples of the products proposed for the work. Such test reports shall be by nationally recognized laboratories or laboratories acceptable to the Buyer. Test Reports shall include dates of testing, locations from which samples were obtained, and test results including compression strengths, bond strengths, abrasion resistance, impact resistance, chemical resistance, temperature resistance, radiation resistance, and results of tests referred to in Paragraph 2.1 of this specification section.

1.6.3.2 Submit test reports made on samples of the systems proposed for the work in accordance with ASTM D3912 using the chemical service requirements of Paragraph 2.3 of this specification section.

1.6.3.3 Submit test report results for physical adhesion in accordance with Paragraph 3.3.3 of this specification.

1.6.4 Sample Panels or Sample Installations

Install in a location designated by the Buyer, a minimum of 100 square feet. The installation procedure as published by the manufacturer of the special coatings is of prime importance. When approved by the manufacturer's representative and the Buyer, maintain the same controls and procedures throughout the remainder of the job. All work must be of the quality approved in the sample area.

1.6.5 Joint Treatment

Submit details for the treatment of construction, and control joints, including description of proposed materials and application procedures. Submit details for the treatment of cracks in the substrate to which special coating materials are to be applied. Joint treatment details shall be submitted for information only.

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1.6.6 Coves

Submit construction details for floor/wall coves, including description of proposed materials and application procedures.

1.6.7 Operation and Maintenance (O&M) Manuals

Submit manufacturer's printed application, maintenance, and repair instructions, including mixing instructions, pot life, storage requirements, surface preparation requirements, and safety requirements. Include inspection intervals, and methods of determining coating system integrity. Comply with ASTM D5163.

1.6.8 Manufacturer's Approval of Applicator

Submit written approval of Applicator by manufacturer of special coatings.

1.6.9 Deleted

1.6.10 Deleted

1.7 CLASSIFICATION OF SYSTEM AND COMPONENTS

(Not Used)

1.8 PROJECT OR SITE ENVIRONMENTAL CONDITIONS

The Vitrification Building has been designed to operate for 40 years with a normal operating temperature within the range 40°F to 120°F. Humidity is not controlled.

1.9 DELIVERY, STORAGE, AND HANDLING

1.9.1 Deliver materials to the job site in the manufacturer's original, unopened packages, with labels intact, legible, and conspicuous. Provide the following information with all deliveries:

1.9.1.1 Name or title of material;

1.9.1.2 Manufacturer's name, stock number, and date of manufacture;

1.9.1.3 Shelf life and special storage requirements;

1.9.1.4 Thinning instructions;

1.9.1.5 Mixing instructions;

1.9.1.6 Application instructions;

1.9.1.7 Clean-up instructions (for surfaces not intended to be coated);

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1.9.1.8 Material Safety Data Sheets (MSDS) complete for each material provided in shipment.

1.9.2 Store materials not in actual use in tightly covered containers within the manufacturer's written recommended storage temperature ranges.

1.10 SPECIAL REQUIREMENTS

1.10.1 General

Special coating systems shall conform to requirements of ASTM D5144, Service Level II, including fabrication of materials, certification of installers, and application, testing, and inspecting.

1.10.2 Deleted

1.10.3 Materials

1.10.3.1 Single Manufacturer

All materials of the special coatings systems, including primer, finish coats, thinners, cleaners, driers, and other additives shall be products of a single manufacturer. Application of multiple manufacturers's products is strictly prohibited. [In the event that the manufacturer of the special coatings systems does not produce a certified radiation resistant coating as specified below, then the radiation resistant coating and associated components shall be Amercoat 90 as manufactured by Ameron PCD, Brea, California, or certified and approved equal; all other special coatings systems and components shall be products of a single manufacturer.]

1.10.3.2 Compatibility

The manufacturer of special coatings shall be identical to the manufacturer of high performance paint as specified in Specification Section 09940, "High Performance Painting."

1.10.4 Installer

Special coatings systems specified in this section shall be installed by Applicator(s) approved by the manufacturer of the materials. Installers shall be qualified in accordance with ASTM D4227.

PART 2 PRODUCTS

2.1 MATERIALS AND EQUIPMENT

2.1.1 Materials

The products herein described are manufactured by Ameron, PCD, Brea California. They are intended to establish minimum acceptable standards of quality of materials, finish, and performance, and are not intended to exclude from consideration comparable products of other manufacturers. Products of other manufacturers will be permitted provided such materials are of equal quality and of the required characteristics for the purpose intended, subject to authorization by the Buyer.

2.1.1.1 Filler Compound [Nu-Klad 114A]

Two-component, 100% solids, amine cured epoxy filler compound; off-white in color. Provide cleaner as recommended by filler compound manufacturer.

2.1.1.2 Primer/Sealer [Nu-Klad 105A]

Two-component, 100% solids, amine cured epoxy penetrating primer and sealer for use on concrete surfaces.

2.1.1.3 Self-Leveling Surfacer [Nu-Klad 120]

Three-component (resin, cure, and powder), self-leveling, 100% solids, aromatic amine cured epoxy surfacer; sprayable or notch trowel spreadable. Compressive strength: ASTM D579, Method A, 11,000 psi minimum. Impact resistance: ASTM G14 (modified) 160 inch-pounds. Tensile strength: ASTM C190, 2500 psi.

2.1.1.4 Surfacer [Amercoat 3228]

Three-component amine-cured epoxy surfacer, 100% solids.

2.1.1.5 Coating [Amerlock 400NT]

Two-component, high-solids (minimum 85%) epoxy coating. Abrasion resistance when measured in accordance with ASTM D4060 using a 1 kg load/1000 cycles CS-17 wheel shall not exceed 102 mg; impact resistance when measured in accordance with ASTM D2794 shall be not less than 24 in-lb (direct), 6 in-lb (reverse); moisture vapor transmission when measured in accordance with ASTM D1653 shall be 6.04g/m²; Adhesion when measured in accordance with ASTM D4541 shall be 900 psi (200 psi minimum on concrete). No face blistering after 3000 hours of salt spray in accordance with ASTM B117. No face corrosion or blistering after 750 hours of

humidity in accordance with ASTM D2247. No blistering after 1 year of fresh water immersion in accordance with NACE TM0169.

2.1.1.6 Radiation Resistant Coating [Amercoat 90]

Two-component, 56% minimum solids, high-performance amine phenolic epoxy coating resistant to 1×10^{10} rads radiation in accordance with requirements of ASTM D4082. Decontaminability shall conform to requirements of ASTM D4256. Thinner and cleaner shall be as manufactured by coating manufacturer.

2.1.1.7 Finish Coating [Amershield]

Two-component, minimum 70% solids, aliphatic polyurethane. Abrasion: ASTM D4060, no more than 60 mg loss, average 1,000 cycles CS-17 wheel, 1000g load. Impact resistance: ASTM D2794, direct, 140 inch-pounds, minimum; reverse, 50 inch-pounds, minimum; ultraviolet QUV weathering: ASTM G53, 72% gloss retention after 672 hours, 4/8 cycle.

2.2 FABRICATION AND MANUFACTURE

(Not Used)

2.3 CHEMICAL SERVICE

2.3.1 Decontamination Solutions

2.3.1.1 Solution Name and Chemical Composition

2.3.1.1.1 NDS: 12 wt% nitric acid & 0.75 wt% potassium permanganate.

2.3.1.1.2 ODS: 10 wt% oxalic acid.

2.3.1.1.3 DSS: Either 12.5 wt% sodium hydroxide; or 5 wt% trisodium phosphate.

2.3.1.1.4 FSK: Decontamination frit slurry, 8 wt% glass frit & 0.1 wt% formic acid.

2.3.1.1.5 LPW: Water; wherever a decontamination solution is used, water can be used for rinsing or for washing by itself.

2.3.1.2 Locations

2.3.1.2.1 Canister Decontamination Cell

Solution FSK.

2.3.1.2.2 All other areas

Solutions NDS, ODS, DSS, LPW. NDS and ODS can be up to boiling (about 212°F); LPW will be issued at ambient temperature (about 76°F); DSS will be issued at ambient temperature (about 76°F), and may be issued at 80°C (176°F) with trisodium phosphate.

2.3.1.3 Decontaminability

Decontaminability shall conform to requirements of ASTM D4256. Decontamination Factor (DF) shall be not less than 1.00.

2.4 FINISHES

2.4.1 Colors

2.4.1.1 Colors shall be as selected by the Buyer from the manufacturer's standard samples and in accordance with FED-STD 595B.

2.4.1.2 Formulate colors with colorants free of lead and lead compounds.

2.4.1.3 Where more than one coat of material is applied within an given system, alternate color hues per coat shall be used to provide a visual reference that the required number of coats have been applied (and also to indicate when overlying coats have been damaged). There shall be no single-layer systems.

2.5 RADIANT PANEL TEST

Materials shall meet the flame spread characteristics required by NFPA 101, Paragraph 28-3.3.1 for Class-B materials in accordance with the requirements of NFPA 255.

PART 3 EXECUTION

3.1 PREPARATION

3.1.1 General

Surfaces shall be prepared in accordance with the special coating manufacturer's written instructions unless otherwise specified. All surfaces shall be prepared with the objective of obtaining a clean, dry, and properly prepared substrate.

3.1.2 Inspection

Prior to the installation of any special coatings systems, examine the existing surfaces and substrate to verify that they are ready to receive the coatings in accordance with the manufacturer's printed instructions. In the event of discrepancy, promptly

notify the Buyer. Do not proceed with installation in areas of discrepancy until authorized by the Buyer.

3.1.3 Concrete Surfaces

3.1.3.1 Curing Period

Concrete shall be allowed to cure a minimum of 28 days prior to the application of any coating, or as recommended by the manufacturer of the special coatings.

3.1.3.2 Form Release Agents

Form release agents used during the construction of the concrete shall be removed unless known to be compatible with the special coating system selected.

3.1.3.3 Curing Compounds

Concrete curing compounds shall be removed unless known to be compatible with the special coating system selected.

3.1.3.4 Concrete Sealer/Hardener

Concrete sealer/hardener as specified in Specification Section 03350, "Concrete Sealer and Hardener", shall be applied prior to application of special coatings only if acceptable to the manufacturer of the special coatings systems.

3.1.3.5 Contaminants

Oil, grease, and materials considered deleterious by the manufacturer of the special coatings shall be removed in accordance with manufacturer's written recommendations, followed by washing of contaminated areas with detergent and water; washing in accordance with ASTM D4258.

3.1.3.6 Blasting

3.1.3.6.1 Incompatible curing compounds, surface laitance, cement glaze, and efflorescence shall be removed by abrasive blast cleaning in accordance with ASTM D4259 and special coatings manufacturer's written instructions. Abrasive used for blasting shall be a maximum of 20-40 mesh and air pressure shall be reduced to prevent excess removal of concrete and exposure of aggregate. Concrete surfaces shall be blasted to a uniform roughness having a surface texture resembling medium grit sandpaper (120 grit). Blasting with water injection may be used to eliminate dust. Waterblasting with sand injection may also be used to produce an acceptable surface with no dusting from blasting.

3.1.3.6.2 Waterblasting in accordance with NACE RP0172 with a pressure of 3000 to 5000 psi will effectively remove the surface laitance and contaminants without exposing aggregate.

3.1.3.6.3 Vacuum blasting units may be utilized.

3.1.3.7 Acid Etching
Not allowed.

3.1.3.8 Defects

Defects in the concrete such as air pockets, pinholes, tie holes, form burrs, honeycombs, cracks, cold joints, and control joints shall be repaired before application of the coating system can proceed. Repairs shall be made following the blasting process using materials and methods in accordance with the manufacturer's written instructions.

3.1.3.9 Surface Soundness

Prepared surface soundness shall be tested in accordance with ACI 503R. If minimum tensile strength is less than 175 psi do not proceed with the work, and notify Buyer.

3.1.3.10 Moisture

Surfaces receiving coating shall be tested for the presence of moisture prior to application of the coating system by using the plastic sheet method in accordance with ASTM D4263 unless otherwise specified. Moisture content shall be within limits specified by the manufacturer before application of special coatings can proceed.

3.1.4 Joint Preparation

Perform surface preparation and cleaning of all joints to receive special coatings applications. Joints shall be prepared in compliance with the special coating manufacturer's written instructions for type and location of joint.

3.1.5 Mixing

3.1.5.1 Prepare multiple-component coatings using all contents of each component container as packaged by the special coating manufacturer. No partial batches will be permitted.

3.1.5.2 Do not use mixed multiple-component coatings beyond their pot life. Provide small quantity kits for touch-up and for patching other small areas.

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3.1.5.3 Mix only the components specified and furnished by the special coatings manufacturer.

3.1.5.4 Do not intermix additional components for reasons of color or otherwise, even with the same generic type of coating.

3.1.5.5 Seal coating materials when not in use.

3.2 INSTALLATION, APPLICATION AND ERECTION

3.2.1 General

Application shall be in accordance with ASTM D5144 and the manufacturer's written instructions unless otherwise specified.

3.2.2 Environmental Conditions

Temperature of materials and substrate shall be in accordance with the manufacturer's written instructions. If the manufacturer has no written instructions, then the material and substrate shall both be between 50°F and 110°F for 24 hours before, during, and after application, through the curing and drying periods, unless otherwise specified.

3.2.3 Humidity

Humidity shall be measured in the area prior to placing coating system. The humidity shall be within the range specified in the manufacturer's written instructions. If the manufacturer has no written instructions, no material shall be applied when the relative humidity is above 85% or the temperature of the surface is less than 5°F above the dew point unless otherwise specified.

3.2.4 Inclement Weather

3.2.4.1 Work may continue during inclement weather only if areas and surfaces to be coated are enclosed or protected and the temperature and environmental conditions within the area are maintained within the limits specified by the manufacturer during application and curing periods.

3.2.4.2 Allow wet surfaces to dry thoroughly and attain the temperature and moisture conditions specified before proceeding with or continuing the coating operation.

3.2.5 Chemical Contamination

If chemical contamination occurs between coats, it shall be removed by washing with water or solvent, and the surface dried before applying the next coat. Solvents, if used, shall be as approved by the special coatings manufacturer.

3.2.6 Application

3.2.6.1 General

All special coating applications shall be in strict accord with the manufacturer's printed instructions.

3.2.6.2 Method

3.2.6.2.1 Primers

Application by roller is preferred to assure complete coverage. For uneven concrete surfaces and concrete containing imperfections, a paint brush may be used. Care must be taken to use rollers and brushes that do not leave fibers and bristles in the primer. Spraying of primers will be permitted and shall be in accordance with the manufacturer's written instructions.

3.2.6.2.2 Coatings

Apply special coatings by brush, roller, spray, squeegee, trowel, or other applicators in accordance with the manufacturer's written recommendations.

3.2.6.3 Finish

Apply each coat to uniform finish, free of runs, sags, lap marks, air bubbles, and pin holes.

3.2.6.4 Number of Coats

The number of coats and coating film thickness required is the same regardless of the application method. Do not apply succeeding coats until previous coat has cured as recommended by special coating manufacturer. The number of coats is the minimum required irrespective of the coating thickness. Additional coats may be required to obtain the minimum required coating thickness.

3.2.6.5 Material Thickness

Apply each material at not thinner than manufacturer's recommended spreading rate. Provide a total dry film thickness of entire coating system as recommended by the manufacturer, unless otherwise specified. Wet film thickness shall be measured in accordance with ASTM D1212. Dry film thickness shall be measured in accordance with ASTM D1005.

3.2.6.6 Brush Applications

Brush-out and work brush coats onto surfaces in an even film. Eliminate cloudiness, spotting, holidays, laps, brush marks, runs, sags, ropiness, and other surface imperfections.

3.2.6.7 Mechanical Applications

3.2.6.7.1 Use mechanical application methods for coating application when permitted by special coating material manufacturer and governing ordinances.

3.2.6.7.2 Wherever spray application is used, apply each coat to provide equivalent hiding of brush applied coats. Do not double back with spray equipment building up film thickness of two coats in one pass, unless specifically recommended or permitted by special coating material manufacturer.

3.2.7 Joints

Particular attention shall be given to the application of special coatings in conjunction with joints. Coating shall be applied in joints as recommended by the manufacturer for the particular type of joint condition. Joints shall be the closed type; not the open type.

3.2.8 Coves

Coves shall be radiused to a minimum of 4 inches and shall be reinforced to eliminate formation of voids underneath.

3.2.9 Sample Area

The sample area described in Part 1 of this specification section may, when approved, be incorporated into the work area.

3.3 FIELD QUALITY CONTROL

3.3.1 Testing

The Buyer reserves the right to invoke the following material testing procedure at any time, and any number of times during the work:

3.3.1.1 The Buyer may engage the service of an independent testing laboratory to sample materials being used. Samples of materials delivered to the project site may be taken, identified, sealed, and certified in the presence of the Seller.

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3.3.1.2 Testing laboratory may perform appropriate tests to verify requirements specified in Paragraph 2.1 of this Specification Section, as well as in accordance with ASTM D3912 using chemical service requirements of Paragraph 2.3 of this Specification Section.

3.3.2 Inspection

Coating inspectors shall be qualified in accordance with ASTM D4537.

3.3.3 Physical Adhesion

Coated surfaces shall be tested in accordance with ASTM D5144 and ASTM D4541, and have a minimum tensile strength of 200 psi.

3.4 ADJUSTMENTS

3.4.1 Repairs

3.4.1.1 Damaged Coatings, Pinholes, Holidays, and Fisheyes

Edges shall be feathered and repaired using the coating materials specified for the original work, unless otherwise specified, in accordance with written recommendations of the special coating manufacturer.

3.4.1.2 Apply all finish coats, including touch-up and damage repair coats in a manner which will present a uniform texture and color-matched appearance.

3.5 CLEANING

3.5.1 Special coatings materials applied to surfaces not intended or designated to receive special coating system shall be cleaned in accordance with the special coatings manufacturer's written instructions.

3.6 PROTECTION

3.6.1 Surfaces and Fixtures

Remove, mask, or otherwise protect surfaces and fixtures not intended to be coated.

3.6.2 Equipment

Protect working parts of mechanical and electrical equipment from damage during surface preparation and coating process.

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3.6.3 Drains

Drains shall be plugged during installation of special coatings systems to ensure that coating does not enter drainage system. All gratings, if any, shall be removed prior to coating application.

3.6.4 Post-Installation Protection

Coated surfaces shall be protected as directed by the Buyer.

3.6.5 Signs

Provide "Wet Paint" signs as required to protect finishes.

3.6.6 Protective Wrappings

After coating application, remove temporary protective wrappings.

3.7 DEMONSTRATION

(Not Used)

3.8 SCHEDULES

Surfaces to receive special coatings, including surfaces specified but not shown, are scheduled in the Contract Drawings in accordance with the following Systems:

SYSTEM A: IN-CELL/RADIATION RESISTANT

Radiation Resistant Coating	2 coats @ 4 mils DFT per coat minimum
-----------------------------	--

SYSTEM B: OUT-OF-CELL

Primer/Sealer	as recommended by manufacturer
---------------	--------------------------------

Coating	2 coats @ 8 mils DFT per coat minimum
---------	--

Finish Coating	1 coat @ 5 mils DFT per coat minimum
----------------	---

SYSTEM C: OUT-OF-CELL

Primer/Sealer	as recommended by manufacturer
---------------	--------------------------------

Self-Leveling Surfacer	1/8 inch DFT
------------------------	--------------

Coating	1 coat @ 8 mils DFT minimum
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Finish Coating 1 coat @ 5 mils DFT per coat
minimum

SYSTEM D: OUT-OF-CELL

Primer/Sealer as recommended by manufacturer

Surfacer 1/4 inch DFT minimum

Coating 1 coat @ 8 mils DFT minimum

Finish Coating 1 coat @ 5 mils DFT per coat
minimum

END OF SECTION

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U.S. DEPARTMENT OF ENERGY
Hanford Waste Vitrification Plant
Richland, Washington
DOE Contract DE-AC06-86RL10838

FLUOR DANIEL, INC.
Advanced Technology Division
Fluor Contract 8457

SECTION 09940
HIGH PERFORMANCE PAINTING
B-595-C-B265A-09940

APPROVED FOR CONSTRUCTION

REVISION 1 PER CR 0933
ISSUE DATE 3-23-93

WAPA YES ☐ NO ☒
QUALITY LEVEL I ☒ II ☐
SAFETY CLASS 1 ☐ 2 ☐ 3 ☒ 4 ☐

ORIGINATOR:

P. von Kronburg 3/22/93
P. von Kronburg, Architect Date

CHECKER:

J. L. Datte 3-22-93
J. L. Datte, Architectural Lead Date

APPROVED BY:

J. L. Datte
J. L. Datte Lead Discipline Engineer

3-22-93
Date

SECTION 09940
HIGH PERFORMANCE PAINTING
B-595-C-B265A-09940

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**SECTION 09940
HIGH PERFORMANCE PAINTING**

PART 1 GENERAL

1.1 SUMMARY

This section covers minimum technical requirements for the preparation of concrete surfaces and the furnishing and installation of high performance paints which are chemical resistant, abrasion resistant, and decontaminable.

1.2 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by the basic designation only.

AMERICAN CONCRETE INSTITUTE (ACI)

ACI 503R 1989 Use of Epoxy Compounds with Concrete

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

ASTM D1005 1984 (Reapproved 1990) Standard Test
Method for Measurement of Dry Film
Thickness of Organic Coatings Using
Micrometers

ASTM D1212 1991 Standard Test Methods for Measurement
of Wet Film Thickness of Organic Coatings

ASTM D3912 1980 (Reapproved 1989) Standard Test
Method for Chemical Resistance of Coatings
used in Light-Water Nuclear Power Plants

ASTM D4227 1983 (Reapproved 1989) Standard Practice
for Qualification of Journeyman Painters
for Application of Coatings to Concrete
Surfaces of Safety-Related Areas of
Nuclear Facilities

ASTM D4258 1983 (Reapproved 1988) Standard Practice
for Surface Cleaning Concrete for Coating

ASTM D4259 1988 Standard Practice for Abrading
Concrete

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ASTM D4263	1983 (Reapproved 1988) Standard Test Method for Indicating Moisture in Concrete by the Plastic Sheet Method
ASTM D4537	1991 Standard Guide for Establishing Procedures to Qualify and Certify Inspection Personnel for Coating Work in Nuclear Facilities
ASTM D4541	1985 (Reapproved 1989) Standard Method for Pull-off Strength of Coatings Using Portable Adhesion Testers
ASTM D5144	1991 Standard Guide for Use of Protective Coatings Standards in Nuclear Power Plants
ASTM D5163	1991 Standard Guide for Establishing Procedures to Monitor the Performance of Safety Related Coatings in an Operating Nuclear Power Plant

FEDERAL STANDARDS (FED-STD)

FED-STD 595B	1989 Colors Used in Government Procurement
--------------	--

NATIONAL ASSOCIATION OF CORROSION ENGINEERS (NACE)

NACE RP0172	1972 Surface Preparation of Steel and Other Hard Materials by Water Blasting Prior to Coating or Recoating
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NATIONAL FIRE PROTECTION ASSOCIATION (NFPA)

NFPA 101	1988 Life Safety Code
NFPA 255	1990 Standard Method of Test of Surface Burning Characteristics of Building Materials

1.3 RELATED REQUIREMENTS

Specification Section 03350	Concrete Sealer and Hardener
Specification Section 09800	Special Coatings

1.4 DEFINITIONS

- 1.4.1 The terms "high performance painting", "painting", and "coating" are used interchangeably in this Specification Section.

1.4.2 Surfaces

Surfaces are defined as all concrete surfaces, including trenches, vaults, and nonvisible areas when permanent or built-in fixtures, equipment, etc., are in place in areas to be painted as scheduled in the Contract Drawings.

1.4.3 System

The words "system" and "systems" when used in conjunction with high performance paint refer to combinations of primer, coating, and finish coats as scheduled in Part 3 of this Specification Section.

1.4.4 Open Joint

A joint which remains conspicuous after coating.

1.4.5 Closed Joint

A joint which is concealed and inconspicuous after coating.

1.4.6 DFT

Dry film thickness.

1.4.7 WFT

Wet film thickness.

1.4.8 Applicator

Organization responsible for surface preparation and installation of high performance paint.

1.4.9 Installer

Individual employed by Applicator to apply high performance paint.

1.5 SYSTEM DESCRIPTION

(Not Used)

1.6 SUBMITTALS

Submit the following in accordance with the Vendor Drawing and Data Requirements section of the Order/Subcontract:

1.6.1 Product Data

Submit manufacturer's published technical information including Material Safety Data Sheets (MSDS), and application instructions for each high performance paint and joint material specified or proposed.

1.6.2 Samples

Submit samples of material and finish for review by Buyer before starting work.

1.6.3 Test Reports

1.6.3.1 Submit test reports made within the previous three years of the date of issue of this section on samples of the products proposed for the work. Such test reports shall be by nationally recognized laboratories or laboratories acceptable to the Buyer. Test Reports shall include dates of testing, locations from which samples were obtained, and test results including compression strengths, bond strengths, abrasion resistance, impact resistance, chemical resistance, temperature resistance, radiation resistance, and results of tests referred to in Paragraph 2.1 of this specification section.

1.6.3.2 Submit test reports made on samples of the systems proposed for the work in accordance with ASTM D3912 using the chemical service requirements of Paragraph 2.3 of this Specification Section.

1.6.3.3 Submit test report results for physical adhesion in accordance with Paragraph 3.3.3 of this specification.

1.6.4 Sample Panels or Sample Installations

Install in a location designated by the Buyer, a minimum of 100 square feet. The installation procedure as published by the manufacturer of the high performance paint is of prime importance. When approved by the manufacturer's representative and the Buyer, maintain the same controls and procedures throughout the remainder of the job. All work must be of the quality approved in the sample area.

1.6.5 Joint Treatment

Submit details for the treatment of construction, and control joints, including description of proposed materials and application procedures. Submit details for the treatment of cracks in the substrate to which high performance paint materials are to be applied. Joint treatment details shall be submitted for information only.

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1.6.6 Operation and Maintenance (O&M) Manuals

Submit manufacturer's printed application, maintenance, and repair instructions, including mixing instructions, pot life, storage requirements, surface preparation requirements, and safety requirements. Include inspection intervals, and methods of determining high performance paint system integrity. Comply with ASTM D5163.

1.6.7 Manufacturer's Approval of Applicator

Submit written approval of applicator by manufacturer of high performance paint.

1.6.8 Deleted

1.6.9 Deleted

1.7 CLASSIFICATION OF SYSTEMS AND COMPONENTS

(Not Used)

1.8 PROJECT OR SITE ENVIRONMENTAL CONDITIONS

The Vitrification Building has been designed to operate for 40 years with a normal operating temperature within the range 40°F to 120°F. Humidity is not controlled.

1.9 DELIVERY, STORAGE, AND HANDLING

1.9.1 Deliver materials to the job site in the manufacturer's original, unopened packages, with labels intact, legible, and conspicuous. Provide the following information with all deliveries:

1.9.1.1 Name or title of material;

1.9.1.2 Manufacturer's name, stock number, and date of manufacture;

1.9.1.3 Shelf life and special storage requirements;

1.9.1.4 Thinning instructions;

1.9.1.5 Mixing instructions;

1.9.1.6 Application instructions;

1.9.1.7 Clean-up instructions (for surfaces not intended to be coated);

1.9.1.8 Material Safety Data Sheets (MSDS) complete for each material provided in shipment.

- 1.9.2 Store materials not in actual use in tightly covered containers within the manufacturer's written recommended storage temperature ranges.

1.10 **SPECIAL REQUIREMENTS**

1.10.1 General

High performance paint systems shall conform to requirements of ASTM D5144, Service Level II, including fabrication of materials, certification of installers, and application, testing, and inspecting.

1.10.2 Deleted

1.10.3 Materials

1.10.3.1 Single Manufacturer

All materials of the special high performance paint systems, including primer, finish coats, thinners, cleaners, driers, and other additives shall be products of a single manufacturer. Application of multiple manufacturers' products is strictly prohibited.

1.10.3.2 Compatibility

The manufacturer of high performance paint systems shall be identical to the manufacturer of special coatings as specified in Specification Section 09800, "Special Coatings".

1.10.4 Installer

High performance paint systems specified in this section shall be installed by Applicator(s) approved by the manufacturer of the materials. Installers shall be qualified in accordance with ASTM D4227.

PART 2 PRODUCTS

2.1 **MATERIALS AND EQUIPMENT**

2.1.1 Materials

The products herein described are manufactured by TNESEC Company, Inc., Kansas City, Missouri. They are intended to establish minimum acceptable standards of quality of materials, finish, and performance, and are not intended to exclude from consideration comparable products of other manufacturers. Products of other manufacturers will be permitted provided such materials are of

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equal quality and of the required characteristics for the purpose intended, subject to authorization by the Buyer.

2.1.1.1 Filler/Surfacer [63-1500 Filler and Surfacer]

Two-component, non-shrinking, trowel-grade, 100% solids, solventless catalyzed epoxy filler and surfacer for use on concrete surfaces.

2.1.1.2 Primer [Series 201 Epoxoprime]

Two-component, polyamine epoxy primer for use on concrete surfaces. Solids by volume (mixed) shall be at least 94%.

2.1.1.3 Coating [Series 275 Stranlok]

Two-component, fiber reinforced, polyamine/novolac epoxy. Solids by volume (mixed) shall be not less than 88%.

2.1.1.4 Exterior Coating [Series 6 TNE-ME-Cryl]

One-component, self-priming, emulsified acrylic coating. Solids by volume shall be at least 41%.

2.1.1.5 Finish [Series 282 TNE-ME-Glaze]

Two-component, polyamine/novolac epoxy finish coating. Solids by volume (mixed) shall be not less than 95%.

2.2 FABRICATION AND MANUFACTURE

(Not Used)

2.3 CHEMICAL SERVICE

2.3.1 Decontamination Solutions

2.3.1.1 Solution Name and Chemical Composition

2.3.1.1.1 NDS: 12 wt% nitric acid and 0.75 wt% potassium permanganate.

2.3.1.1.2 ODS: 10 wt% oxalic acid.

2.3.1.1.3 DSS: Either 12.5 wt% sodium hydroxide; or 5 wt% trisodium phosphate.

2.3.1.1.4 LPW: Water; wherever a decontamination solution is used, water can be used for rinsing or for washing by itself.

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2.3.1.2 Solution Temperatures

Solutions NDS and ODS can be up to boiling (about 212°F); LPW will be issued at ambient temperature (about 76°F); DSS will be issued at ambient temperature (about 76°F), and may be issued at 80°C (176°F) with trisodium phosphate.

2.3.1.3 Decontaminability

Decontaminability shall conform to requirements of ASTM D4256. Decontamination Factor (DF) shall be not less than 1.00.

2.4 FINISHES

2.4.1 Colors

2.4.1.1 Colors shall be as selected by the Buyer from the manufacturer's standard samples and in accordance with FED-STD 595B.

2.4.1.2 Formulate colors with colorants free of lead and lead compounds.

2.4.1.3 Where more than one coat of material is applied within a given system, alternate color hues per coat shall be used to provide a visual reference that the required number of coats have been applied (and also to indicate when overlying coats have been damaged). There shall be no single-layer systems.

2.5 RADIANT PANEL TEST

Materials shall meet the flame spread characteristics required by NFPA 101, Paragraph 28-3.3.1 for Class-B materials in accordance with the requirements of NFPA 255.

PART 3 EXECUTION

3.1 PREPARATION

3.1.1 General

Surfaces shall be prepared in accordance with the high performance paint manufacturer's written requirements unless otherwise specified. All surfaces shall be prepared with the objective of obtaining a clean, dry, and properly prepared substrate.

3.1.2 Inspection

Prior to the installation of any high performance paint systems, carefully examine the existing surfaces and substrate to verify that they are ready to receive the paint in accordance with the manufacturer's printed criteria. In the event of discrepancy,

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promptly notify the Buyer. Do not proceed with installation in areas of discrepancy until authorized by the Buyer.

3.1.3 Concrete Surfaces

3.1.3.1 Curing Period

Concrete shall be allowed to cure a minimum of 28 days prior to the application of any paint, or as recommended by the manufacturer of the high performance paint.

3.1.3.2 Form Release Agents

Form release agents used during the pouring of the concrete shall be removed unless known to be compatible with the high performance paint system selected.

3.1.3.3 Curing Compounds

Concrete curing compounds used to retard water evaporation while the concrete is curing shall be removed unless known to be compatible with the high performance paint system selected.

3.1.3.4 Concrete Sealer/Hardener

Concrete sealer/hardener as specified in Specification Section 03350, "Concrete Sealer and Hardener", shall be applied prior to application of high performance paint only if acceptable to the manufacturer of the high performance paint systems.

3.1.3.5 Contaminants

Oil, grease, and materials considered deleterious by the manufacturer of the high performance paint shall be removed in accordance with manufacturer's written recommendations, followed by washing of contaminated areas with detergent and water; washing in accordance with ASTM D4258.

3.1.3.6 Blasting

3.1.3.6.1 Incompatible curing compounds, surface laitance, cement glaze, and efflorescence shall be removed by abrasive blast cleaning in accordance with ASTM D4259 and high performance paint manufacturer's written instructions. Abrasive used for blasting shall be a maximum of 20-40 mesh and air pressure shall be reduced to prevent excess removal of concrete and exposure of aggregate. Concrete surfaces shall be blasted to a uniform roughness having a surface texture resembling medium grit sandpaper (120 grit). Blasting with water injection may be used to eliminate dust. Waterblasting with sand injection may also be used to produce an acceptable surface with no dusting from blasting.

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- 3.1.3.6.2 Waterblasting in accordance with NACE RP0172 with a pressure of 3000 to 5000 psi will effectively remove the surface laitance and contaminants without exposing aggregate.
- 3.1.3.6.3 Vacuum blasting units may be utilized.
- 3.1.3.7 Acid Etching
Not allowed.
- 3.1.3.8 Defects
Defects in the concrete such as air pockets, pinholes, tie holes, form burrs, honeycombs, cracks, cold joints, and control joints shall be repaired before application of the coating system can proceed. Repairs shall be made following the blasting process using materials and methods in accordance with the manufacturer's written instructions.
- 3.1.3.9 Surface Soundness
Prepared surface soundness shall be tested in accordance with ACI 503R. Testing of surface soundness shall not be required for surfaces on the exterior of the building. If minimum tensile strength is less than 175 psi do not proceed with the work, and notify Buyer.
- 3.1.3.10 Moisture
Surfaces receiving high performance paint shall be tested for the presence of moisture prior to application of the high performance paint system by using the plastic sheet method in accordance with ASTM D4263 unless otherwise specified. Moisture content shall be within limits specified by the manufacturer before application of high performance paint can proceed.
- 3.1.4 Joint Preparation
Perform surface preparation and cleaning of all joints to receive high performance paint applications. Joints shall be prepared in compliance with the paint manufacturer's written instructions for type and location of joint.
- 3.1.5 Mixing
- 3.1.5.1 Prepare multiple-component coatings using all contents of each component container as packaged by the high performance paint manufacturer. No partial batches will be permitted.

3.1.5.2 Do not use mixed multiple-component coatings beyond their pot life. Provide small quantity kits for touch-up and for patching other small areas.

3.1.5.3 Mix only the components specified and furnished by the high performance paint manufacturer.

3.1.5.4 Do not intermix additional components for reasons of color or otherwise, even with the same generic type of coating.

3.1.5.5 Seal paint and associated materials when not in use.

3.2 INSTALLATION, APPLICATION, AND ERECTION

3.2.1 General

Application shall be in accordance with ASTM D5144 and the manufacturer's written instructions unless otherwise specified.

3.2.2 Environmental Conditions

Temperature of materials and substrate shall be in accordance with the manufacturer's written instructions. If the manufacturer has no written instructions, then the material and substrate shall both be between 50°F and 110°F for 24 hours before, during, and after application, through the curing and drying periods, unless otherwise specified.

3.2.3 Humidity

Humidity shall be measured in the area prior to placing high performance paint system. The humidity shall be within the range specified in the manufacturer's written instructions. If the manufacturer has no written instructions, no material shall be applied when the relative humidity is above 85% or the temperature of the surface is less than 5°F above the dew point unless otherwise specified.

3.2.4 Inclement Weather

3.2.4.1 Work may continue during inclement weather only if areas and surfaces to be painted are enclosed or protected and the temperature and environmental conditions within the area are maintained within the limits specified by the manufacturer during application and curing periods.

3.2.4.2 Allow wet surfaces to dry thoroughly and attain the temperature and moisture conditions specified before proceeding with or continuing the painting operation.

3.2.5 Chemical Contamination

If chemical contamination occurs between coats, it shall be removed by washing with water or solvent, and the surface dried before applying the next coat. Solvents, if used, shall be as approved by the high performance paint manufacturer.

3.2.6 Application

3.2.6.1 General

All high performance paint applications shall be in strict accord with the manufacturer's printed instructions.

3.2.6.2 Method

3.2.6.2.1 Primers

Application by roller is preferred to assure complete coverage. For uneven concrete surfaces and concrete containing imperfections, a paint brush may be used. Care must be taken to use rollers and brushes that do not leave fibers and bristles in the primer. Spraying of primers will be permitted and shall be in accordance with the manufacturer's written instructions.

3.2.6.2.2 Coatings

Apply high performance paint coatings by brush, roller, spray, squeegee, trowel, or other applicators in accordance with the manufacturer's written recommendations.

3.2.6.3 Finish

Apply each coat to uniform finish, free of runs, sags, lap marks, air bubbles, and pin holes.

3.2.6.4 Number of Coats

The number of coats and coating film thickness required is the same regardless of the application method. Do not apply succeeding coats until previous coat has cured as recommended by high performance paint manufacturer. The number of coats is the minimum required irrespective of the coating thickness. Additional coats may be required to obtain the minimum required coating thickness.

3.2.6.5 Material Thickness

Apply each material at not thinner than manufacturer's recommended spreading rate. Provide a total dry film thickness of entire high performance paint system as recommended by the manufacturer,

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unless otherwise specified. Wet film thickness shall be measured in accordance with ASTM D1212. Dry film thickness shall be measured in accordance with ASTM D1005.

3.2.6.6 Brush Applications

3.2.6.6.1 Brush-out and work brush coats onto surfaces in an even film. Eliminate cloudiness, spotting, holidays, laps, brush marks, runs, sags, ropiness, and other surface imperfections.

3.2.6.7 Mechanical Applications

3.2.6.7.1 Use mechanical application methods for coating application when permitted by high performance paint material manufacturer and governing ordinances.

3.2.6.7.2 Wherever spray application is used, apply each coat to provide equivalent hiding of brush applied coats. Do not double back with spray equipment building up film thickness of two coats in one pass, unless specifically recommended or permitted by coating material manufacturer.

3.2.7 Joints

Particular attention shall be given to the application of high performance paint in conjunction with joints. Coating shall be applied in joints as recommended by the manufacturer for the particular type of joint condition. Joints shall be the closed type; not the open type.

3.2.8 Sample Area

The sample area described in Part 1 of this specification section may, when approved, be incorporated into the work area.

3.3 FIELD QUALITY CONTROL

3.3.1 Testing

The right is reserved by the Buyer to invoke the following material testing procedure at any time, and any number of times during the application period:

3.3.1.1 The Buyer may engage the service of an independent testing laboratory to sample materials being used. Samples of materials delivered to the project site may be taken, identified, sealed, and certified in the presence of the Seller.

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3.3.1.2 Testing laboratory may perform appropriate tests to verify requirements specified in Paragraph 2.1 of this Specification Section, as well as in accordance with ASTM D3912 using chemical service requirements of Paragraph 2.3 of this Specification Section.

3.3.2 Inspection

High performance paint inspectors shall be qualified in accordance with ASTM D4537.

3.3.3 Physical Adhesion

Painted surfaces shall be tested in accordance with ASTM D5144 and ASTM D4541, and have a minimum tensile strength of 200 psi.

3.4 **ADJUSTMENTS**

3.4.1 Repairs

3.4.1.1 Damaged Coatings, Pinholes, Holidays, and Fisheyes

Edges shall be feathered and repaired using the painting materials specified for the original work, unless otherwise specified, in accordance with written recommendations of the high performance paint manufacturer.

3.4.1.2 Apply all finish coats, including touch-up and damage repair coats in a manner which will present a uniform texture and color-matched appearance.

3.5 **CLEANING**

3.5.1 High performance paint materials applied to surfaces not intended or designated to receive high performance paint shall be cleaned in accordance with the manufacturer's written instructions.

3.6 **PROTECTION**

3.6.1 Surfaces and Fixtures

Remove, mask, or otherwise protect surfaces and fixtures not intended to be painted.

3.6.2 Equipment

Protect working parts of mechanical and electrical equipment from damage during surface preparation and painting process.

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3.6.3 Post-Installation Protection

Painted surfaces shall be protected as directed by the Buyer.

3.6.4 Signs

Provide "Wet Paint" signs as required to protect finishes.

3.6.5 Protective Wrappings

After high performance paint application, remove temporary protective wrappings.

3.7 DEMONSTRATION

(Not Used)

3.8 SCHEDULES

Surfaces to receive high performance paint, including surfaces specified but not shown, are scheduled in the Contract Drawings and in accordance with the following System:

SYSTEM A - INTERIOR

Primer 1 coat @ 8 mils DFT minimum


Coating 1 coat @ 25 mils DFT minimum

Finish 1 coat @ 8 mils DFT minimum

SYSTEM B - EXTERIOR

Exterior Coating 2 coats @ 3 mils DFT minimum

END OF SECTION

1	3/25/93	REVISIONS PER CR-HWVP-893, 897, 956 AND MINOR CHANGES	LK	SS	LK	BT
0	12/21/92	APPROVED FOR CONSTRUCTION	JLD	PVK	JLD	PJS
			DMG	JHM	JGK	RSP
REV NO.	DATE	REVISION DESCRIPTION	APPROVAL INITIALS			
CADFILE	B116007A		CADCODE	2B:IBM:ACD2:10.C2:SS		
ENGINEERING RELEASE		U.S. DEPARTMENT OF ENERGY				
REV _____ DATE _____						
ERO _____		Richland Field Office DE - AC06-85RL10838				
SIGNATURE		DATE	 FLUOR DANIEL, INC. ADVANCED TECHNOLOGY DIVISION			
PROJ DIR R. S. POULTER		12/18/92				
QA MGR J. G. KELLY		12/18/92	VIT BLDG PAINT AND SPECIAL COATINGS TITLE SHEET			
INDEPENDENT SAFETY MGR J. H. MARTIN		12/18/92				
PROJECT MGR D. M. GARRETT		12/18/92	HANFORD WASTE VITRIFICATION PLANT			
SYSTEMS MGR J. L. SMETS		12/18/92				
ENGINEERING MGR P. J. SPEIDEL		12/18/92	PROJECT TITLE HANFORD WASTE VITRIFICATION PLANT			
SUPERVISOR J. L. DATTE		12/18/92				
DESIGN ENGINEER P. V. KRONBURG		12/18/92	PROJECT B-595			
CHECKED J. L. DATTE		12/18/92				
DRAWN S. SAM		07/09/92	FLUOR CONTRACT NO. 8457			
CLASSIFICATION		BY				
NONE		NOT REQD	SCALE SHOWN			
			BLDG NO. 1			
			CWBS NO. B265A			
			INDEX NO. 			
			DRAWING NUMBER H-2-116007			
			SHEET 1			
			OF 1			
			REV 1			


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INITIALS: SS
DATE: 03/22/93

1	3/25/93	REVISIONS PER CR-HWVP-893. 897. 956 AND MINOR CHANGES	LK	LS	LK	<i>[Signature]</i>
0	12/21/92	APPROVED FOR CONSTRUCTION	JLD	PVK	JLD	PJS JLS
			DMG	JHM	JGK	RSP
REV NO.	DATE	REVISION DESCRIPTION	APPROVAL INITIALS			
CADFILE	B116008A		CADCODE	2B:IBM:ACD2:10.C2:SS		
ENGINEERING RELEASE		U.S. DEPARTMENT OF ENERGY Richland Field Office DE - AC06-B6RL10838				
REV	DATE					
ERO		 FLUOR DANIEL, INC. ADVANCED TECHNOLOGY DIVISION				
SIGNATURE	DATE					
PROJ DIR			VIT BLDG PAINT AND SPECIAL COATINGS DRAWING INDEX			
R. S. POULTER	12/18/92					
QA MGR						
J. G. KELLY	12/18/92					
INDEPENDENT SAFETY MGR						
J. H. MARTIN	12/18/92					
PROJECT MGR						
D. M. GARRETT	12/18/92					
SYSTEMS MGR						
J. L. SMETS	12/18/92					
ENGINEERING MGR						
P. J. SPEIDEL	12/18/92					
SUPERVISOR						
J. L. DATTE	12/18/92					
DESIGN ENGINEER						
P. V. KRONBURG	12/18/92					
CHECKED		PROJECT TITLE				
J. L. DATTE	12/18/92	HANFORD WASTE VITRIFICATION PLANT				
DRAWN		PROJECT	FLUOR CONTRACT NO.	CWBS NO.		
S. SAM	07/12/92	B-595	8457	B265		
CLASSIFICATION	BY	SCALE	BLDG NO.	INDEX NO.		
NONE	NOT REQD.	NONE	1			
		DRAWING NUMBER	SHEET	OF	REV	
		H-2-116008	1	1	1	

DISTRIBUTION CODE: 301

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INITIALS: SS


DATE: 03/22/93

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QUALITY LEVEL 1
SAFETY CLASS 3

1	3/05/93	REVISION-MINOR CHANGE	LK	GH	LK	
0	12/21/92	APPROVED FOR CONSTRUCTION	JLD	PVK	JLD	PJS JLS
			DMG	JHM	JGK	RSP
REV NO.	DATE	REVISION DESCRIPTION	APPROVAL INITIALS			
CADFILE	B117587B		CADCODE	2B:IBM:ACD2:10.C2:SS		
ENGINEERING RELEASE			U.S. DEPARTMENT OF ENERGY Richland Field Office DE - AC06-86RL10838			
REV _____ DATE _____ ERO _____						
SIGNATURE		DATE	 FLUOR DANIEL, INC. ADVANCED TECHNOLOGY DIVISION ARCHITECTURAL VIT BLDG TUNNEL PLAN-NORTH END			
PROJ DIR R. S. POULTER		12/18/92				
QA MGR J. G. KELLY		12/18/92				
INDEPENDENT SAFETY MGR J. H. MARTIN		12/18/92				
PROJECT MGR D. M. GARRETT		12/18/92				
SYSTEMS MGR J. L. SMETS		12/18/92				
ENGINEERING MGR P. J. SPEIDEL		12/18/92				
SUPERVISOR J. L. DATTE		12/18/92				
DESIGN ENGINEER P. V. KRONBURG		12/18/92	PROJECT TITLE HANFORD WASTE VITRIFICATION PLANT			
INDEX	CHECKED J. L. DATTE	12/18/92	PROJECT B-595	FLUOR CONTRACT NO. 8457	CWBS NO. B265A	
	DRAWN S. SAM	07/02/92	SCALE 1/8" = 1'-0"	BLDG NO. 1	INDEX NO.	
CLASSIFICATION NONE		BY NOT REQD	DRAWING NUMBER H-2-117587		SHEET 2	OF 3
					REV 1	

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INITIALS: SS


DATE: 03/22/93

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QUALITY LEVEL 1
SAFETY CLASS 3

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1	3/25/93	REVISION PER CR-HWVP-956	LK	SS	LK	
0	12/21/92	APPROVED FOR CONSTRUCTION	JLD	PVK	JLD	PJS JLS
			DMG	JHM	JGK	RSP
REV NO.	DATE	REVISION DESCRIPTION	APPROVAL INITIALS			
CADFILE	B117588A		CADCODE	2B:IBM:ACD2:10.C2:SS		
ENGINEERING RELEASE		U.S. DEPARTMENT OF ENERGY Richland Field Office DE - AC06-B6RL10B38				
REV	DATE					
ERO		 FLUOR DANIEL, INC. ADVANCED TECHNOLOGY DIVISION				
SIGNATURE	DATE					
PROJ DIR R. S. POULTER	12/18/92	ARCHITECTURAL VIT BLDG CONTACT MAINT ROOM				
QA MGR J. G. KELLY	12/18/92					
INDEPENDENT SAFETY MGR J. H. MARTIN	12/18/92					
PROJECT MGR D. M. GARRETT	12/18/92					
SYSTEMS MGR J. L. SMETS	12/18/92					
ENGINEERING MGR P. J. SPEIDEL	12/18/92					
SUPERVISOR J. L. DATTE	12/18/92					
DESIGN ENGINEER P. V. KRONBURG	12/18/92					
INDEX	CHECKED J. L. DATTE	12/18/92	PROJECT TITLE HANFORD WASTE VITRIFICATION PLANT			
	DRAWN S. SAM	07/09/92	PROJECT B-595	FLUOR CONTRACT NO. 8457	CWBS NO. B265A	
	CLASSIFICATION NONE	BY NOT REQD	SCALE 1/8" = 1'-0"	BLDG NO. 1	INDEX NO.	
			DRAWING NUMBER H-2-117588	SHEET 1	OF 1	REV 1

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INITIALS: SS

DATE: 03/22/93

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1
QUALITY LEVEL 1
SAFETY CLASS 3

1	3/25/93	REVISION PER CR-HWVP-956	LK	SS	LK	
0	12/21/92	APPROVED FOR CONSTRUCTION	JLD	PVK	JLD	PJS JLS
			DMG	JHM	JGK	RSP
REV NO.	DATE	REVISION DESCRIPTION	APPROVAL INITIALS			
CADFILE	B117589C		CADCODE	2B:IBM:ACD2:10.C2:SS		
ENGINEERING RELEASE			U.S. DEPARTMENT OF ENERGY Richland Field Office DE -- AC06-86RL1083B			
REV _____ DATE _____ ERO _____						
SIGNATURE		DATE	FLUOR DANIEL, INC. ADVANCED TECHNOLOGY DIVISION ARCHITECTURAL VIT BLDG 1ST FLR PLAN-S/R			
PROJ DIR						
R. S. POULTER		12/18/92				
QA MGR						
J. G. KELLY		12/18/92				
INDEPENDENT SAFETY MGR						
J. H. MARTIN		12/18/92				
PROJECT MGR						
D. M. GARRETT		12/18/92				
SYSTEMS MGR						
J. L. SMETS		12/18/92				
ENGINEERING MGR						
P. J. SPEIDEL		12/18/92				
SUPERVISOR						
J. L. DATTE		12/18/92				
DESIGN ENGINEER						
P. V. KRONBURG		12/18/92				
PROJECT TITLE			HANFORD WASTE VITRIFICATION PLANT			
CHECKED			PROJECT	FLUOR CONTRACT NO.	CWBS NO.	
J. L. DATTE		12/18/92	B-595	8457	B265A	
DRAWN			SCALE	BLDG NO.	INDEX NO.	
S. SAM		07/10/92	1/8" = 1'-0"	1		
CLASSIFICATION		BY	DRAWING NUMBER		SHEET	OF
NONE		NOT REQD	H-2-117589		3	3
						REV
						1

DISTRIBUTION CODE: 301

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ACAD

INITIALS: SS
DATE: 03/22/93

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QUALITY LEVEL 1
SAFETY CLASS 3

1

1	3/25/92	REVISION PER CR-HWVP-897	LK	44	LK							
0	12/21/92	APPROVED FOR CONSTRUCTION	JLD	PVK	JLD	PJS JLS						
			DMG	JHM	JGK	RSP						
REV NO.	DATE	REVISION DESCRIPTION	APPROVAL INITIALS									
CADFILE	B117591A		CADCODE	2B:IBM:ACD2:10.C2:SS								
ENGINEERING RELEASE			U.S. DEPARTMENT OF ENERGY Richland Field Office DE - AC06-86RL10838									
REV _____ DATE _____ ERO _____												
SIGNATURE		DATE	 FLUOR DANIEL, INC. ADVANCED TECHNOLOGY DIVISION									
PROJ DIR R. S. POULTER		12/18/92										
QA MGR J. G. KELLY		12/18/92										
INDEPENDENT SAFETY MGR J. H. MARTIN		12/18/92										
PROJECT MGR D. M. GARRETT		12/18/92										
SYSTEMS MGR J. L. SMETS		12/18/92										
ENGINEERING MGR P. J. SPEIDEL		12/18/92										
SUPERVISOR J. L. DATTE		12/18/92					ARCHITECTURAL VIT BLDG 2ND FLR PLAN-SOUTH END					
DESIGN ENGINEER P. V. KRONBURG		12/18/92										
PROJECT TITLE HANFORD WASTE VITRIFICATION PLANT			<table border="1"> <tr> <td>PROJECT B-595</td> <td>FLUOR CONTRACT NO. 8457</td> <td>CWBS NO. B265A</td> </tr> <tr> <td>SCALE 1/8" = 1'-0"</td> <td>BLDG NO. 1</td> <td>INDEX NO.</td> </tr> </table>				PROJECT B-595	FLUOR CONTRACT NO. 8457	CWBS NO. B265A	SCALE 1/8" = 1'-0"	BLDG NO. 1	INDEX NO.
PROJECT B-595	FLUOR CONTRACT NO. 8457	CWBS NO. B265A										
SCALE 1/8" = 1'-0"	BLDG NO. 1	INDEX NO.										
INDEX	CHECKED J. L. DATTE	12/18/92										
	DRAWN S. SAM	07/02/92										
CLASSIFICATION NONE		BY NOT REQD	DRAWING NUMBER H-2-117591		SHEET 1	OF 2						
					REV 1							

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INITIALS: SS

DATE: 03/22/93

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